CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

DATE: November 26, 2001

TO: Interested Parties

FROM: Nancy Tronaas, Compliance Project Manager

SUBJECT: **Sunrise Power Project (98-AFC-4C)**
Staff Analysis of Proposed Project Modification
Increase of Simple-Cycle Operating Hours

On August 31, 2001, the California Energy Commission (Energy Commission) received a petition from the Sunrise Power Company (SPC) to amend the Energy Commission Decision for the Sunrise Power Project (SPP). SPP is located approximately 35 miles southwest of Bakersfield and one mile southwest of the intersection of State Route 33 and Shale Road in Kern County, California. SPP is a 320MW simple-cycle natural gas-fired power plant that was certified by the Energy Commission in December 2000 and commenced commercial operation June 2001. The proposed project modification will allow for an increase in the hours of simple-cycle operations from the current peak-only to base-load operations through December 2003.

The Energy Commission recently approved a petition submitted by SPC to convert the existing simple-cycle power plant to combined-cycle operations. The combined-cycle power plant expansion should commence construction in the next few weeks and is scheduled for commercial operations by summer 2003, at which time simple-cycle operations would terminate. The increased simple-cycle hours will allow SPC additional flexibility should the conversion to combined-cycle operations be delayed.

Energy Commission staff reviewed the proposed petition to increase the simple-cycle hours of operation and assessed the impacts of this proposal on environmental quality, public health and safety. Staff prepared new and/or revisions to existing conditions of certification for air quality. It is the Energy Commission staff's opinion that with the implementation of these conditions, the project will remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed project modification will not result in a significant effect upon the environment (*Title 20, California Code of Regulations, Section 1769).*

The air quality staff analysis is attached for your information and review. Energy Commission staff intends to recommend approval of the petition at the December 5 2001 Business Meeting of the Energy Commission. If you have comments on this proposed project change, please submit them to the me at the address above prior to December 5, 2001. If you have any questions, please call me at (916) 654-3864 or e-mail at ntronaas@energy.state.ca.us.

Attachment

Sunrise Power Project (98-AFC-4)
Request to Amend Conditions of Certification
to Increase the Simple-cycle Operations
Joseph M. Loyer
November 26, 2001

AMENDMENT REQUEST

Pursuant to the Governors Executive Orders (D-24-01, 25-01, 26-01 and 28-01), Sunrise Power Company, LLC (SPC) has requested that the Conditions of Certification for the Sunrise Power Project (SPP) be amended to allow for additional hours of simple-cycle operation until December 31, 2003.

SPC has already obtained a Final Determination of Compliance (FDOC) from the San Joaquin Valley Unified Air Pollution Control District (District) for this amendment; however, the District has not issued a Permit to Operate (PTO) yet. SPC proposes to amend all 43 Conditions of Certification with the conditions that the District has already modified in the FDOC.

BACKGROUND

SPC was issued a Commission Decision in December of 2000 to construct and operate a 320 MW simple-cycle, natural gas fired power plant near the town of Derby Acres in the western portion of Kern County. The applicant was originally planning to convert the facility to combined cycle (for a total of 585 MW) or cogeneration operation within 2 years of the license being granted (AQ-41). SPP was found to be fully mitigated by the proposed emission reduction credits (ERCs) provided. The SPP construction was completed and simple-cycle commercial operation commenced on June 26, 2001.

The Air Quality section of the Final Staff Assessment for the simple-cycle project did not address potential Environmental Justice impacts, as is the practice today. However this issue was addressed in a recent amendment for the SPP to convert the project to combined cycle operation. During the same process, staff also amended the cumulative impact assessment. For purposes of clarity, staff will include the previous Environmental Justice and Cumulative Impact analyses as part of this analysis for the simple-cycle extended operation.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

No federal or local laws ordinances, regulations or standards will affect or be affected by the proposed extension of the simple-cycle operations of the SPP. However, there are several Executive Orders issued by the Governor of California that are invoked as the basis for this amendment request.

Executive Orders issued by the Governor of California, Gray Davis

The following Executive Orders begin with, and are in large part based upon, the declaration by Governor Davis on January 17, 2001, that a State of Emergency exists due to the energy shortage in the State of California. The Governor further recognized that there was a high probability of rolling blackouts throughout California; that conservation, allocation and service restrictions would not alleviate the power shortage and finally, that the power shortage poses a threat to public health, safety and welfare.

Therefore, the Governor issued a series of Executive Orders that facilitate the expedited construction of power plants and related modifications to regulatory processes.

Executive Order D-24-01,
Enacted February 8, 2001
Expiration: December 31, 2001

This order directed local air districts (Districts) to modify emission limits or operational restrictions on power plants as necessary to ensure that power generation facilities are not restricted from operating. The Districts are further directed to collect a mitigation fee for any exceedance of the previously identified air emission limits. The California Air Resources Board (CARB) was directed to establish an emission reduction credit bank (Bank). This Bank is to be used by new or expanded peaking power plants whose capacity will be available for the summer of 2001.

If the owner of a new or expanded power plant agrees to sell power under contract with California Department of Water Resources (CDWR), the Bank will provide, if necessary and available at up to a 50% in price of the required emission reduction credits (ERCs). For those new or expanded power plants that do not sell power under a CDWR contract, the Bank will make the ERCs available for purchase, if necessary and available. The proceeds of such an ERC sale will be used to fund emission reductions in the District where the purchasing facility is located.

The actual funding of the Bank (i.e., how the emission reductions will be created) is not discussed by the Executive Order (EO). However, the Bank will be primarily funded by mobile emission source reductions through programs currently active at the California Air Resources Board (CARB), such as the Carl Moyer Program. This may include farming equipment, trucking equipment, construction equipment and fleet vehicle modifications.

Executive Order D-25-01,
Enacted February 8, 2001
Expiration: December 31, 2001

This order directs the Energy Commission to expedite the necessary review of all amendments for all power plants and particularly those requesting conversion from a simple-cycle operation to combined cycle or cogeneration operation. The Energy Commission is ordered to establish milestones for the initiation of construction within one year of certification and for the general progression of construction. Failure to meet the established milestones may result in forfeiture of the certification. For all of these purposes, the Energy Commission is authorized to suspend requirements of regulations as necessary.

Executive Order D-26-01,
Enacted February 8, 2001
Expiration: December 31, 2001

This order directs all State, regional and local agencies to shorten the necessary review time under the California Environmental Quality Act (CEQA) to 7 days for power plants that do not fall under the jurisdiction of the Energy Commission and will be online by the summer of 2001.

This order establishes two new certification procedures, the Emergency Siting and 4-month Siting processes. The Emergency Siting process encompasses plants authorized under PRC section 25705 and that can be operating by July 31, 2001 as well as peaking or renewable power plants that both have contracts with the Independent System Operator (ISO) and can be online by July 2001. The 4-month process is restricted to simple-cycle power plants that are deemed data adequate by the Energy Commission no later than December 31, 2001 and can be brought on line no later than August 31, 2002.

For both processes, qualifying applicants do not need to provide ERCs at the time of filing. For all siting processes, the order states that State, regional and local agencies that may have any involvement in the certification process are required to respond to the Energy Commission requests in a timely fashion consistent with the expedited process. For both processes, the California Public Utilities Commission is ordered to ensure that investor-owned utilities perform necessary transmission interconnection studies within 7 days of receipt of a completed application.

This order also requires the Energy Commission to provide a study indicating beneficial sites in California for peaking power plants that would potentially augment supplies and ensure reliability through the summer of 2003.

ANALYSIS

Project Description

This project consists of extending hours of operation of the following major components that are already constructed and operational:

- Two GE Frame 7FA natural gas fired combustion turbines with inlet cooling and dry low NOx combustors.
- Natural gas pipeline, transmission line, potable water and waste water pipelines.

Project Emissions

Construction

There are no construction emissions associated with this amendment request.

Operation

SPC is requesting to extend their simple-cycle operation beyond 2002 (AQ-41) into 2003. SPC is also requesting to increase their hours of operation for the remainder of 2001 and for all of 2002 and 2003 from approximately 2,453 hours/year (based on a capacity factor limit of 28% in AQ-43) to 4,992 hours/year for an increase of 2,540 hours/year.

Air Quality Table 1 shows the maximum expected hourly emissions as the SPP was originally licensed. As is demonstrated there are several minor changes to the

assumed emission rates as compared to AIR Quality Table 2, which shows various operating scenarios that represent the expected maximum hourly emission rates. For NOx, SOx and PM10, the maximum expected emission rates occur when both turbines are at maximum load. However, VOC and CO emissions are highest when the turbines are in either startup or shutdown modes of operation. AIR QUALITY Table 2 shows the different assumptions made for emissions during the winter quarters (Quarters 1 and 4) and the summer quarters (quarters 2 and 3). The essential difference is the minimum ambient air temperature expected during which emissions are expected to be highest, 15 ^{0}F in winter and 65 ^{O}F in summer. SPC is making this refinement primarily to lessen their offset liability. While this is a reasonable refinement to make, staff will reflect it in the proposed amendments to the Conditions of Certification.

AIR QUALITY Table 1
Maximum Hourly Emissions as Originally Licensed
(lbs/hr except where noted)

Operational Profile	NO_x	SO_2	PM10	VOC	CO
Startup or Shutdown Lbs/event (20 minute events)	32.00	1.28	7.00	17.00	163.00
Full Load at 15^{o}F	60.93	3.85	9.00	2.81	29.14
Full Load at 65^{o}F	57.06	3.60	9.00	2.62	26.87
2 CTG Full Load at 15^{o}F	121.86	7.70	18.00	5.62	58.28
2 CTGs Full Load at 65^{o} F	114.12	7.20	18.00	5.24	53.74
1 CTG startup (20 minutes) and Full Load at 15^{o}F (40 minutes)	72.62	3.85	13.00	18.87	182.43
2 CTG startup (20 minutes) and Full Load at 15^{o}F (40 minutes)	145.24	7.70	26.00	37.74	364.86

AIR QUALITY Table 2
Maximum Expected Hourly Emissions
(lbs/hour)

	Start up/Shutdown[a]		Maximum Load[b]	
Pollutant	1st & 4th Quarter	2nd & 3rd Quarter	1st & 4th Quarter	2nd & 3rd Quarter
NOx	32	32	60.93	57.06
SOx	1.2833	1.2	3.85	3.6
CO	163	163	29.14	26.87
VOC	17	17	2.81	2.62
PM10	7	7	9	9

a – Startup and shutdown are assumed to last approximately 20 minutes.
b – 1st and 4th quarter emissions at maximum load are based on 15 °F in winter and 65 °F in spring and summer.

The simple-cycle operation of combustion turbines typically does not result in the turbines operating for an entire 24-hour period. It is more common for a simple-cycle combustion turbine to startup, operate at maximum load, and shutdown all within a single day. Thus, AIR QUALITY Table 3 shows the maximum expected daily emissions from the proposed simple-cycle operation of the SPP, which is not the maximum emission possible. The levels for the 1st and 4th quarters are based on the hourly emission rates shown in AIR QUALITY Table 2 for those quarters, as are those for the 2nd and 3rd quarters. AIR QUALITY Table 3 also shows the expected emissions from SPP if it where to operate for a complete 24-hour period at full load, and as it was originally licensed for comparison purposes only.

AIR QUALITY Table 3
Expected Daily Maximum Emissions
(lbs/day)

Pollutant	**1st & 4th Quarter[a]**	**2nd & 3rd Quarter[b]**	**1st & 4th Quarter[c]**	**2nd & 3rd Quarter[d]**	**As Originally Licensed[e]**
NOx	2,321.48	2,182.16	2,924.64	2,738.88	2,077.76
SOx	143.73	134.40	184.80	172.80	128.34
CO	1,701.04	1,619.32	1,398.72	1,289.76	1,584.48
VOC	169.16	162.32	134.88	125.76	157.92
PM10	352.00	352.00	432.00	432.00	316.00

a – Assumes 1st and 4th quarter hourly emission factors for 1 startup, 1 shutdown and 18 hours of maximum load operation.
b - Assumes 2nd and 3rd quarter hourly emission factors for 1 startup, 1 shutdown and 18 hours of maximum load operation.
c - Assumes 1st and 4th quarter hourly emission factors for 24 hours of maximum load operation.
d - Assumes 2nd and 3rd quarter hourly emission factors for 24 hours of maximum load operation.
e - 2 turbine startup, operate at Full Load for 16 hours and shut down.

The expected annual emissions shown in AIR QUALITY Tables 4, 5 and 6 include both turbines for each quarter operating as indicated. AIR QUALITY Table 4 shows the expected quarterly and annual emissions as originally licensed. In AIR QUALITY Table

5, during the 1st quarter of 2001, the turbines at SPP were being constructed; therefore there were no operational emissions. The 2nd and 3rd quarter emissions of 2001 do not represent actual emissions (for confidentiality concerns and availability), but are based on worse case expected emissions from the SPP facility. The remainder of the 3rd quarter and all of the 4th quarter assume the SPP turbines will operate each day, 7 days a week (for an annual total of 4,992 hours total for 2001).

AIR QUALITY Table 4
Quarterly and Annual Emissions as Originally Licensed

Quarter	PM10	SO_X	NO_X	VOC	CO
1[a] (lbs)	3,964.00	1,606.74	26,036.00	2,008.00	20,132.00
2[b] (lbs)	7,584.00	2,880.00	46,894.08	3,644.16	36,284.16
3[c] (lbs)	18,780.00	7,128.00	116,094.00	9,058.00	90,173.00
4[d] (lbs)	3,964.00	1,606.74	26,036.00	2,008.00	20,132.00
Annual (lbs)	34,292.00	13,221.48	215,060.08	16,718.16	166,721.16
Annual (tons)	17.15	6.61	107.53	8.36	83.36

a - 13 startups/13 shutdowns @ 20 min. each and 200 hrs of full load operation.
b - 24 startups/24 shutdowns @ 20 min each and 384 hrs of full load operation.
c - 60 startups/60 shutdowns @ 20 min each and 950 hours of full load operation.
d - 13 startups/13 shutdowns @ 20 min. each and 200 hrs of full load operation.

AIR QUALITY Table 5
Expected 2001 Annual Emissions
(lbs)

Pollutants	1st Quarter[a]	2nd Quarter[b]	3rd Quarter[c]	4th Quarter[d]	Annual Total
NOx	0.00	59,397.92	256,753.98	213,971.28	530,123.18
SOx	0.00	3,734.40	15,897.62	13,248.42	32,880.44
CO	0.00	30,337.84	175,346.05	156,684.65	362,368.53
VOC	0.00	2,975.84	17,504.55	15,580.94	36,061.33
PM10	0.00	9,400.00	41,216.06	32,442.36	83,058.42

a– no emissions, facility under construction.
b- for one turbine assumes 3 startups, 3 shutdowns and 432 hours of full load operation and for the other turbine, assumes 5 startup, 5 shutdowns and 600 hours of full load operation.
c- for both turbines assumes 92 startups, 92 shutdowns, 2146.67 hours of full load operation.
d– for both turbines, assumes 92 startups, 92 shutdowns, 1659.2424 hours of full load operation.

AIR QUALITY Table 6 shows the expected emissions per quarter for both 2002 and 2003. SPC assumes they will startup and shutdown 78 times in each of the four quarters, but the hours of operation will vary based on expected demand as shown (for a total of 4,992 hours per year). Outside of the hours of operation shown in AIR QUALITY Tables 5 and 6, SPP is assumed to be shutdown.

AIR QUALITY Table 6
Expected 2002 & 2003 Annual Emissions
(lbs)

Pollutants	1st Quarter[a]	2nd Quarter[b]	3rd Quarter[c]	4th Quarter[d]	Annual Total
NOx	159,993.66	152,063.40	153,546.96	163,283.88	628,887.90
SOx	9,879.09	9,338.40	9,432.00	10,086.99	38,736.48
CO	122,598.68	117,762.30	118,460.92	124,172.24	482,994.14
VOC	12,222.22	11,827.80	11,895.92	12,373.96	48,319.90
PM10	24,342.00	24,594.00	24,828.00	24,828.00	98,592.00

a- for both turbines assumes 78 startups, 78 shutdowns, 1231 hours of full load operation.
b- for both turbines assumes 78 startups, 78 shutdowns, 1245 hours of full load operation.
c- for both turbines assumes 78 startups, 78 shutdowns, 1258 hours of full load operation.
d- for both turbines assumes 78 startups, 78 shutdowns, 1258 hours of full load operation.

Project Direct Impacts

Construction

There will be no construction impacts associated with this amendment request.

Fumigation

During the early morning hours before sunrise, the air is usually very stable. During such stable meteorological conditions, emissions from elevated stacks rise through this stable layer and are dispersed. When the sun first rises, the air at ground level is heated, resulting in a vertical (both rising and sinking air) mixing of air for a few hundred feet or so. Stack emissions that enter this vertically mixed layer of air will also be vertically mixed, bringing some of those emissions down to ground level. Later in the day, as the sun continues to heat the ground, this vertical mixing layer becomes higher and higher, and the emissions plume becomes better dispersed. The early morning air pollution event, called fumigation, usually lasts approximately 30 to 90 minutes. Since fumigation impacts will not typically occur much beyond a 1-hour period, only impacts on 1-hour standards are addressed.

Air Quality Table 7 shows the results of the fumigation modeling that was performed by the SPP. These results demonstrate that the 1-hour standards for NO_2, SO_2 and CO are not exceeded under fumigation conditions. Therefore, staff concludes that under fumigation conditions, the Sunrise project emissions have no potential to cause a significant impact on the ambient air quality standards.

AIR QUALITY Table 7
1-hour Fumigation Modeling Results

Pollutant	Averaging Time	Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Limiting Standard ($\mu g/m^3$)	Percent of Standard
NO_2	1-hour	6.1	97	103.1	470	22
CO	1-hour	15.3	2,941	2956.3	23,000	13
SO_2	1-hour	0.3	104	104.3	655	16

Operation

AIR QUALITY Table 8 represents the modeling performed by the applicant for the simple-cycle operation of the SPP. Staff has reviewed the modeling provided and found that it adequately represents the proposed simple-cycle project, including the appropriate emission rates, exhaust temperatures, the appropriate stack heights and the indicated operations. AIR QUALITY Table 8 shows that the only pollutant expected to contribute to an exceedance of the ambient air quality standards is PM10 for both the 24-hour and annual California State standards.

AIR QUALITY Table 8
Combustion Turbine Refined Modeling Maximum Impacts

Pollutant	Average Time	SPC's Modeled Impacts ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Limiting Standard ($\mu g/m^3$)	Percent of Standard
NO_2	1-hour	65.4	97	162.4	470	35
	Annual	0.05	20.6	20.7	100	21
CO	1-hour	164	2,941	3105	23,000	14
	8-hour	13.0	2,222	2235	10,000	22
SO_2	1-hour	3.5	104	107.5	655	16
	3-hour	2.0	68	70	1300	5
	24-hour	0.3	38	38.3	130	29
	Annual	0.003	1.8	1.8	80	2
PM10	24-hour	0.67	118	118.7	50	**237**
	Annual	0.01	42.6	42.6	30	**142**

a - Background data from Fellows monitoring station 1992-1995

b - Impact assumes 100% conversion for NOx to NO2

Cumulative Impacts

SPC performed a cumulative analysis for the combined cycle amendment request. The cumulative impact analysis includes the La Paloma, Elk Hills (as combined cycle) and Western Midway Sunset power plant projects recently licensed through the California Energy Commission. The results of the cumulative analysis are presented in Air Quality

Table 9. The results of that analysis show that, other than the expected impacts on PM10, these projects will not cause a significant cumulative impact. The PM10 impacts shown from the combined cycle operation of SPP could constitute a significant impact if left unmitigated. PM10 emission impacts from the simple-cycle operation of SPP will be similar to those of the combined cycle operation. This is because the simple-cycle operation is now proposed to operate longer hours (similar to a combined cycle) and PM10 emissions are not affected by post combustion controls. Thus it is reasonable to expect that the PM10 emission impacts from the simple-cycle operation will also be significant if left unmitigated.

Air Quality Table 9
Cumulative Analysis for the Sunrise Proposed Amendment

Pollutant	Averaging Period	Modeled Impact (ug/m^3)	Background (ug/m^3)[a]	Total predicted Impact (ug/m^3)	Limiting Standard (ug/m^3)	Percent of Standard (%)
CO	1-hour	1,748	2,441	4,189	23,000	18
	8-hour	307.7	2,222	2,530	10,000	25
NO_2	1-hour	243.5[b]	97	340.5	470	72
	Annual	4.18	20.6	24.8	100	25
PM10	24-hour	6.51	118	124.5	50	**249**
	Annual	0.96	42.6	43.6	30	**145**
SO_2	1-hour	16.87	104	121	655	18
	3-hour	10.13	68	78	1,300	6
	24-hour	1.47	38	39.5	105	38
	Annual	0.21	1.8	2.0	80	3

a - Background data from the Fellows monitoring station 1992-1995
b - Results obtained using ozone limiting method

Secondary Pollutant Impacts

SPP emissions of NOx, SO2 and VOC can contribute to the formation of secondary pollutants, ozone and PM10. There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the modeling to determine ozone impacts. There are no regulatory agency models approved for assessing single source ozone impacts. However, because of the known relationship of NOx and VOC emissions to ozone formation, staff concludes that the emissions of NOx and VOC from the SPP do have the potential (if left unmitigated) to contribute to higher ozone levels in the region.

Secondary PM10 formation is the process of conversion from gaseous reactants to particulate products. The process of gas-to-particulate conversion is complex and depends on many factors, including local humidity and the presence of other compounds. Currently, there are no agency (EPA or CARB) recommended models or procedures for estimating nitrate or sulfate formation. However, because of the known relationship of NOx and SOx to secondary PM10 formation, staff concludes that the emissions of NOx and SOx from the SPP do have the potential (if left unmitigated) to contribute to higher secondary PM10 levels in the region.

Environmental Justice Impacts

In this section staff will discuss the potential impacts regarding air quality related environmental justice issues. This section is not intended to provide a definitive analysis on environmental justice impacts in general, but only addresses those concerns related to air quality. Conclusions reached here are limited in scope to air quality impacts only.

Environmental Justice analyses are based on the idea that low income and minority populations may incur a higher portion of pollution due to their proximity to light or heavy industry as compared to affluent or non-minority populations. In determining if there is such an impact, staff must first determine where, if anywhere, low income or minority population exist and at what demographic concentrations. Concentrations of low income or minority populations at greater than 50% within a contiguous community would designate that community as an Environmental Justice Population (EJ-Population). Once an EJ-Population has been identified within six miles of the proposed site, then the direct air quality impact (excluding ozone and secondary PM10 impacts) on that EJ-Population must be compared with the impacts on non-Environmental Population (NEJ-Population) that is within six miles. If the impact on the EJ-Population is significant (by itself) and disproportionally higher than that on the NEJ-Population, then staff must conclude that there is a potential for an Environmental Justice Impact (EJ-Impact) if the emissions are left unmitigated.

The census data that the staff relies on to analyze minority and low-income population concentrations in the Sunrise area are inconclusive. Specifically, the citizens of the nearby town of Derby Acres did not respond in sufficient numbers to the census inquiry to enable staff to determination if they are an EJ-Population. Staff therefore drove through Derby Acres to do an informal visual survey. From this survey, staff concluded that there was a potential for Derby Acres to meet the definition of an EJ-Population. Therefore, staff finds it reasonable to conservatively presume that Derby Acres has an EJ-Population.

Derby Acres is located approximately 1.5 miles due north of the project site. The modeling analysis provided by the applicant indicates that the PM10 24-hour and annual impacts will be almost exclusively west and south of the project site (See Figure 8.1-6 and -7). The maximum PM10 impacts, as determined by ISCST3 modeling, are 4.01 ug/m^3 for the 24-hour averaging period and 0.22 ug/m^3 for the annual. The points of maximum impact are predicted to occur approximately 3 miles south of Derby Acres. Derby Acres is expected to receive PM10 concentrations of less than 0.5 ug/m^3 (24-hour) and 0.01 ug/m^3 (annual) from the Sunrise facility. This is compared with a background of 118 ug/m^3 and 42 ug/m^3 respectively.

From the modeling provided, it is staff's expectation that there is little or no potential that Derby Acres will be significantly impacted from primary PM10 emissions at the Sunrise facility. Therefore, staff concludes that there is no EJ-Impact on the Derby Acres community.

Mitigation Measures

Operational Mitigation

Offsets

District Rule 2102, Section 4.2, requires that SPC provide emission offsets, in the form of banked Emission Reduction Credits (ERC), for the project's emissions of NO_x, SO_2, VOC and PM10. Offsets for the project's CO emissions are not required since the project will not cause any violations of any CO standard and the area currently does not experience any violations of any CO standard. SPC is using ERCs to offset NO2, SO2, PM10 and VOC emissions from the simple-cycle project purchased from the Texaco and Aera stationary combustion sources within the western oil fields of Kern County.

SPC also is being granted 202.5 tons/year of NOx ERCs from the California State Bank for the remainder of 2001 and for all of 2002 and 2003. The State Bank does not track the ERCs as a typical local air district bank would. There are no certificate numbers or tracking identification assigned to a specific reduction action that would create an ERC. More importantly, there are no specific emission reduction actions that are associated with a specific allocation from the State Bank. Therefore, it is not possible for Commission staff to review a specific banking action in the State Bank that would be used to potentially mitigate the impacts from the SPP extended simple-cycle operation. However, staff is confident, after discussions with District and CARB staff, that the emission reductions are real, surplus, quantifiable, enforceable and permanent as required under federal new source review rules. AIR QUALITY Table 10 shows the source of the ERCs within the State Bank. As can be seen for the San Joaquin Valley, the bulk of the ERCs come from emission reductions from agricultural irrigation pumps. These pumps are diesel powered stationary engines that have been replaced with modern diesel engines (for the most part). There are no agricultural irrigation pumps located in Kern County (where SPP is located). All of these projects are located at least 2 counties upwind of the SPP facility site. However, since the reductions do occur in an upwind area, they will very likely have the same effect of reducing the potential ozone formation of the SPP NOx emissions.

AIR QUALITY Table 10
State Bank NOx ERCs
(tons/year)

Source Category	San Joaquin Valley	Statewide
On-Road		
Heavy-duty Line Haul	41	41
Refuse Haulers	10.1	303
Urban Transit Buses	0	130
School Buses	0	3
Other	0.8	5
Off-Road		
Farm Equipment	10	18
Construction	0	0.09
Other	0	36
Locomotives	0	22
Marine Vessels	0	386
Agricultural Irrigation Pumps	839.1	1,092
Forklifts (electric)	0	129
Total	**901**	**2,165**

Source: The Carl Moyer Program Status Report, California Air Resources Board, April 13, 2001.

AIR QUALITY Table 11 shows the total funding and allocations of the State Bank in both the San Joaquin Valley and statewide. As can be seen, the State Bank has a significant excess surplus of ERCs both within the San Joaquin Valley and statewide. Given the magnitude of the surplus ERCs within the San Joaquin Valley, it is staff's opinion that there are clearly sufficient ERCs available to mitigate the SPP air emission impacts.

AIR QUALITY Table 11
State Bank Funding vs. Allocations
(tons/year)

	San Joaquin Valley	State Wide
Available ERCs	901.0	2,165.0
Allocated ERCs	250.0	450.4
Surplus ERCs	**651.0**	**1,714.6**

AIR QUALITY Tables 12 and 13 show the ERCs as compared to the project emissions on both an annual and daily basis. Based on this assessment, staff concludes that the emission impacts from the proposed extended operation of SPP are mitigated to a level of insignificance on an annual basis for 2001, 02 and 03.

AIR QUALITY Table 12
Offset Liability and Emission Reduction Credit Annual Balance

	Offset Liability (tons/yr)	Emission Reduction Credits (ton/yr)[a]	Excess Emission Reduction Credits (tons/yr)	Remaining Offset Liability (tons/yr)	PM10 ERCs for NOx Liability (tons/yr)[b]	Remaining Offset Liability (tons/yr)
2001						
NO_x	265.06	389.97	124.91	--	--	-124.91
SO_2	16.44	33.89	17.45	--	--	-17.45
VOC	18.03	28.29	10.25	--	--	-10.25
PM10	41.53	146.96	105.43	--	--	-105.43
2002+03						
NO_x	314.44	389.97	75.52	--	--	-75.52
SO_2	19.37	33.89	14.52	--	--	-14.52
VOC	24.16	28.29	4.13	--	--	-4.13
PM10	49.30	146.96	97.67	--	--	-97.67

a - The annual ERC value is calculated by summing the ERC without considering the distance ratio normally applied by the District.
b – The excess PM10 ERCs are converted to NOx ERCs at a ratio of 2.22 to 1.

Although annual simple-cycle project emissions will be greater in 2002 and 2003 than in 2001 the worst case daily emissions liability are the same for 2001, 02 and 03, therefore AIR QUALITY Table 13 shows only one data set as opposed to Table 12 which shows different data for each year. AIR QUALITY Table 13 shows that VOC emissions exceed the mitigation provided by SPC on a daily basis. This exceedance is primarily due to District Rule 2201 (section 6.8.2.2) which allows the applicant to have 10 tpy of emissions that are not offset. In effect, the rule allows the applicant to reduce their need to purchase ERCs by 10 tons. The southern Kern County area has been identified in the original licensing case as being VOC rich. This means that there are significantly higher concentrations of VOC in the ambient air than is necessary to form ozone. Given that this area is significantly VOC rich and that NOx emissions are being mitigated in excess of 821 pounds per day, it is staff's opinion that the impacts from the VOC emissions are mitigated to a level of insignificance.

AIR QUALITY Table 13
Offset Liability and Emission Reduction Credit Daily Balance

	Offset Liability (lbs/day)[c]	Emission Reduction Credits (lbs/day)[a]	Excess Emission Reduction Credits (lbs/day)	Remaining Offset Liability (lbs/day)	PM10 ERCs for NOx Liability (lbs/day)[b]	Remaining Offset Liability (lbs/day)
NO_x	2790.80	2142.59	--	648.21	798.07	-149.86
SO_2	184.80	186.23	1.43	--	--	-1.43
VOC	199.13	155.41	--	43.72	--	**43.72**
PM10	448.00	807.49	359.49	--	--	0

a - The annual ERC value is calculated by summing the ERC without considering the distance ratio normally applied by the District and divided by 365 days per year.
b – The excess PM10 ERCs are converted to NOx ERCs at a ratio of 2.22 to 1.
C – This reflects the expected emissions for the 2nd and 3rd quarters of the year, when ozone concentrations are at a maximum.

COMPLIANCE WITH APPLICABLE LORS

Governor's Orders

D-24-01

SPC invokes this Order to exceed the District capacity factor limit of 28% (AQ-43) for the extended operation of the SPP. SPC is required to pay the District a mitigation fee. SPC has paid the District their mitigation fee.

D-25-01

SPC invokes this Order for the Commission to expeditiously process this amendment request. SPC is required to accept milestones for the progress of construction and failing to meet such milestones may result in the forfeiture of their certification.

Since SPC has completed the construction of the turbines and is in operational phase of the project, they require no milestones.

CONCLUSIONS

Staff concludes that the proposed extension of simple-cycle operations to December 31, 2003 by the SPC will not cause a significant impact on the ambient air quality of the San Joaquin Valley. Staff recommends the approval of the petition with the following changes to the Conditions of Certification for the Sunrise Power Project. The proposed language retains the intent of the original Commission Decision and Conditions of Certification.

Proposed Modifications to the Conditions of Certification

SJVUAPCD Permit No. S-3746-1 General Electric Frame 7, Model PG724FA, natural gas fired ~~combined cycle~~ gas turbine engine/electric generator ~~with dry low NOx combustors, selective catalytic reduction, oxidation catalyst, and steam turbine~~ listed with S-3746-2 ~~(585 MW total plant nominal rating)~~.

SJVUAPCD Permit No. S-3746-2- General Electric Frame 7, Model PG724FA, natural gas fired ~~combined cycle~~ gas turbine engine/electric generator ~~with dry low NOx combustors, selective catalytic reduction, oxidation catalyst, and steam turbine~~ listed with S-3746-2 ~~(585 MW total plant nominal rating)~~.

AQ-14 During startup or shutdown of any combustion turbine generator(s), combined emissions from the two CTGs (S-3746-1 and '-2) shall not exceed the following: ~~Nox – 700 lbs and CO – 1580 lbs in any one-hour.~~

For simple cycle mode of operation

NOx	145.24 lbs in any one hour
CO	364.86 lbs in any one hour

FOR COMBINED CYCLE MODE OF OPERATION

NOx	700 lbs in any one hour

CO 1,580 lbs in any one hour

[CEQA]

Verification: The Project owner shall provide records of the emissions as part of the quarterly reports of Condition **AQ-31**.

AQ-15 Emission rates from each CTG, except during startup and shutdown events, shall not exceed any of the following:
[District Rules 2201, 4001, and 4703]

While operating in simple cycle mode:

PM10	9 lbs/hr
SOx (as SO2)	3.85 lbs/hr.
NOx (as NO2)	60.93 lbs/hr.
	9.0 ppm
VOC	2.81 lbs/hr.
	1.3 ppm
CO	29.14 lbs/hr.
	7.5 ppm

NOx (as NO2) emission concentration limit is a one-hour rolling average. All other emission concentration limits are three-hour rolling averages

While operating in combined cycle mode:

PM10:	17.8 lbs/hr
SOx (as So2):	1.55 lbs/hr
NOx (as No2):	15.96 lbs/hr and 2.0 ppmvd @ 15% O2
VOC:	5.51 lbs/hr and 2.0 ppmvd @ 15% O2
CO:	19.22 lbs/hr and 4.0 ppmvd @ 15% O2
Ammonia:	10 ppmvd @ 15% O_2

NOx (as NO2) emission concentration limit is a one-hour rolling average. Ammonia emission concentration limit is a 24-hour rolling average. All other emission concentration limits are three-hour rolling averages

Protocol: Each one-hour period in a one-hour rolling average will commence on the hour. Each one-hour period in a 3-hour rolling average will commence on the hour. The 3-hour average will be compiled from the three most recent 1-hour periods. 24-hour average emissions will be compiled for a 24-hour period starting and ending at twelve-midnight.
[District Rule 2201]

Verification: The Project owner shall provide records of the emissions as part of the quarterly reports of Condition **AQ-31.**

AQ-16 Emission rates from each CTG shall not exceed the following:

While operating in simple cycle mode:

PM10: 224.00 lbs/day
SOx (as So2): 92.40 lbs/day.
NOx (as No2): 1,485.70 lbs/day.
VOC: 99.57 lbs/day.
CO: 1,005.93 lbs/day.

While operating in combined cycle mode:
PM10: 461.2 lbs/day
SOx (as So2): 37.2 lbs/day
NOx (as No2): 1,170.9 lbs/day
VOC: 220.6 lbs/day
CO: 2,443.4 lbs/day
[District Rule 2201]

Protocol: Daily emissions will be compiled for a 24-hour period starting and ending at twelve-midnight. [District Rule 2201]

Verification: The Project owner shall provide records of the emissions as part of the quarterly reports of Condition **AQ-31**.

AQ-17 Quarterly and ~~A~~annual emissions from ~~the~~ both CTGs combined ~~calculated on a twelve consecutive month rolling basis~~ shall not exceed any of the following limits:

For simple cycle operation:
During the year of 2001 (units are in pounds):

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Total
PM10	0	9,400	41,216	32,442	83,058
SOx (as SO2)	0	3,734	15,897	13,248	32,880
NOx (as NO2)	0	59,398	256,754	213,971	530,123
VOC	0	2,976	17,504	15,581	36,061
CO	0	30,338	175,346	156,685	362,369

During the year of 2002 & 2003 (units are in pounds):

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Total
PM10	24,342	24,594	24,828	24,828	98,592
SOx (as SO2)	9,879	9,338	9,432	10,087	38,736
NOx (as NO2)	159,994	152,063	153,547	163,284	628,888
VOC	12,222	11,828	11,896	127,374	48,320
CO	122,599	117,762	118,461	124,172	482,994

For combined cycle operation:

Annual emission limits only

PM10:	269,651 lbs/year
SOx (as So2):	24,259 lbs/year
NOx (as No2):	311,337 lbs/year
VOC:	87,674 lbs/year
CO:	507,978 lbs/year

[District Rule 2201]

Protocol: Each calendar month in a twelve consecutive month rolling emissions total will commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions total to determine compliance with annual emission limits will be compiled from the twelve most recent calendar months. [District Rule 2201]

Verification: The Project owner shall provide records of the emissions as part of the quarterly reports of Condition **AQ-31**.

AQ-18 ~~Prior to or upon startup of either S-3476-1 or '2,~~ Eemission offsets shall be surrendered for all calendar quarters in the following amounts, at the offset ratio specified in Rule 2201 (6/15/95 version) in the following table ~~at least 30 days prior to the commencement of construction~~.

	~~Quarter 1~~	~~Quarter 2~~	~~Quarter 3~~	~~Quarter 4~~
~~PM10~~	~~3,964~~	~~7,584~~	~~18,780~~	~~3,964~~
~~NOx (as NO2)~~	~~21,036~~	~~41,894~~	~~111,094~~	~~21,036~~

FOR THE YEAR 2001

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
PM10	0	9,400	41,216	32,442
SOx (as SO2)	0	3,734	15,898	13,248
NOx (as NO2)	0	57,157	247,068	205,898
VOC	0	1,326	7,796	6,940

FOR THE YEARS 2002 AND 2003

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
PM10	24,342	24,594	24,828	24,828
SOx (as SO2)	9,879	9,338	9,432	10,087
NOx (as NO2)	154,994	147,063	148,547	158,284
VOC	7,222	6,828	6,896	7,374

[District Rule 2201]

~~Prior to or upon startup of either S-3746-1 or '2,~~ The following emissions offsets shall be provided to the District to provide additional environmental benefits during the initial phase of this Project and shall be used towards the

offset requirements, if needed, when the next phase of this Project is implemented:

	~~Quarter 1~~	~~Quarter 2~~	~~Quarter 3~~	~~Quarter 4~~
~~PM10~~	~~67,364~~	~~64,647~~	~~51,763~~	~~69,001~~
~~SOx (as SO2)~~	~~14,075~~	~~14,231~~	~~14,387~~	~~14,387~~
~~NOx (as NO2)~~	~~67,207~~	~~0~~	~~18,105~~	~~26,538~~
~~VOC~~	~~13,949~~	~~14,104~~	~~14,259~~	~~14,259~~

FOR THE YEAR 2001

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
PM10	72,121	62,468	21,286	34,178
SOx (as SO2)	14,075	9,750	0	0
NOx (as NO2)	92,450	0	0	0
VOC	13,949	12,513	4,904	5,931

FOR THE YEARS 2002 AND 2003

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
PM10	42,911	44,235	44,505	43,964
SOx (as SO2)	2,220	3,025	3,069	2,283
NOx (as NO2)	0	0	0	0
VOC	5,283	5,910	5,984	5,410

~~Prior to or upon startup of either S-3746-1, '2 and '3, t~~The following emissions offsets shall be provided to the District to provide additional environmental benefits during the initial phase of phase II of the Sunrise Project and shall be used towards the offset requirements:

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
PM10	10,541	8,266	20,637	16,404
NOx (as NO2)	9,157	4,195	0	6,571
VOC	4,983	3,111	5,791	6,648

Verification: The Project owner shall provide copies of all the necessary ERC certificates to the CPM ~~no later than 30 days prior to the commencement of construction~~.

AQ-26 The source test plans for the initial and seven-year source test shall include a method for measuring the CO/VOC surrogate relationship that will be used to demonstrate compliance with VOC lbs/hr, lbs/day, and lbs/twelve month rolling average emission limits upon combined cycle operation. [District Rule 2201]

Verification: The Project owner shall provide a source test plan to the CPM and District for the CPM and District approval 15 days prior to testing. Initial source testing shall occur no later than 90 days following the first day of combined cycle operation.

AQ-29 The Project owner shall maintain hourly records of NOx, and CO emission concentrations (ppmv @ 15% o2), and hourly, daily, and annual records of NOx and CO emissions. Compliance with the hourly, daily, and annual VOC emission limits shall be demonstrated by the CO CEM data and the CO/VOC relationship determined by annual CO and VOC source tests upon combined cycle operation. [District Rule 2201]

Verification: The Project owner shall provide records of the emissions as part of the quarterly reports of Condition **AQ-31**.

AQ-41 ~~This approval and permit shall expire on December 31, 2002. The equipment authorized by this approval and permit shall cease operation no later than December 31, 2002. The equipment shall not be operated beyond December 31, 2002 unless the permittee has filed an application for Determination of Compliance or an Authority Construct and an Application for Certification or amendment to the existing Conditions of Certification for a modification of the Project to a combined cycle or cogeneration Project and has received prior authorization form the District and California Energy Commission to construct the combined cycle or cogeneration Project. Any application seeking authorization to amend the simple-cycle power plant to a combined cycle power plant, or a cogeneration plant shall be treated as a modification of the existing equipment. The Project shall be subject to Best Available Control Technology requirements for new equipment effective at the time such application for modification is deemed complete. By initiating construction under this permit, the owner waives any vested right in operating this equipment as a simple cycle power plant beyond December 31, 2002."~~ The project owner will cease the simple cycle operation of the Sunrise Power Project and convert it to combined cycle operation prior to January 1, 2004.

Verification: ~~The Project owner shall submit an Application for Certification or an amendment to the existing Conditions of Certification and obtain approval by December 31, 2002 or cease all operation of the Sunrise Simple Cycle Plant.~~ The project owner shall submit to the CPM a valid and current Authority to Construct issued to them by the San Joaquin Valley Unified Air Pollution Control District authorizing the Sunrise Power Project to begin construction on the Sunrise Power Project for conversion to combined cycle operation no later than January 1, 2003. The project owner shall submit to the CPM a valid and current Permit to Operate issued to them by the San Joaquin Valley

Unified Air Pollution Control District authorizing the Sunrise Power Project to operate as a combined cycle power plant no later than 30 days prior to the first expected date of operation as a combined cycle power plant.

~~**AQ-43** Electrical production capacity factor for CTG shall not exceed 28% on an annual basis. For a given year, capacity factor shall be calculated as: {(total MW produced per year x total hours of operation per year)/(1,445,400 MW-hrs, which is the total net MW rating for CTG, 165 MW, times 8,760 hours per year}.~~

~~**Verification:** The Project owner shall maintain records on site of electrical production capacity factors to demonstrate compliance with this condition.~~